

We claim:

1. A particulate storage combination comprising
a case element having an opening

5 and

a detachable valved lid element

said case element and said lid element being configured such that said lid element is removably attached to said case element so as to cover said opening and form an enclosed space for containing a particulate substance,

10 said lid element comprising a valve member having an outflow aperture and defining a flow path for the flow of particulate material out of said enclosed space, said valve member further comprising a plug element and a bias component, said plug element and said bias component being configured such that said plug element is displaceable between a closed position and an open position whereby when said plug element is in said closed
15 position said plug closes off said outflow aperture whereby particulate material is unable to flow out of said enclosed space through said outflow aperture and when said plug element is in said open position particulate material is able to flow out of said enclosed space through said outflow aperture, said bias element biasing said plug element in said closed position.

- 20 2. A storage combination as defined in claim 1 wherein said valve member is a valved spout member.

- 25 3. A storage combination as defined in claim 1 wherein said enclosed space contains a particulate milk substance.

4. A storage combination as defined in claim 1 comprising a valve plug interaction element for releasably maintaining said plug in said open position.

- 30 5. A conveyance system for conveying or dispensing a particulate substance from a removable particulate storage component to a predetermined location or station, wherein said removable particulate storage component comprises a valved wall element and is configured to define an enclosed space for containing a particulate substance,
said valved wall element comprising a valve member defining an outflow aperture for

providing a flow path for the flow of particulate material out of said enclosed space, said valve member further comprising a plug element and a bias element, said plug and bias elements being configured such that said plug is displaceable between a closed position and an open position whereby when said plug is in said closed position said plug closes off said outflow aperture whereby particulate substance is unable to flow out of said enclosed space through said outflow aperture and when said plug is in said open position particulate substance is able to flow out of said enclosed space through said outflow aperture,

said assembly comprising

a particulate delivery component,

wherein said particulate delivery component comprises a conveyor element for conveying particulate substance from the replaceable particulate storage component to said predetermined station, and an interconnect element for releasably interconnecting the conveyor element and the outflow aperture for the flow of particulate substance through the outflow aperture to the conveyor element.

6. A conveyance system as defined in claim 5 wherein said particulate delivery component comprises a valve plug interaction element for releasably maintaining said plug in said open position.

7. A conveyance system as defined in claim 5 wherein said system comprises a support component, and wherein said support component is configured for releasably engaging said removeable storage component such that the storage component is oriented so that the valved wall member at least partially forms the bottom of the so engaged storage component.

8. An conveyance system as defined in claim 5 wherein said system comprises said removeable particulate storage component.

9. A beverage selection system for an automatic beverage machine for dispensing a beverage selectable from a plurality of beverage types, said selection system comprising a configuration controller component, a plurality of switch configuration elements, and a switch selection element, characterized in that

said switch selection element comprises a light reflection member,

5 each of said switch configuration elements comprises a light detection component comprising a light emitter means for providing light for reflection from said light reflection member as reflected light, and a light detector means for detecting said reflected light from said light reflection member

10 each of said switch configuration elements is configured to pass from a first state to a second state in response to detection of said reflected light and to pass from said second state to said first state in response to the non-detection of said reflected light, each switching element being connected to the configuration controller component, the configuration controller component being able to recognize when a switch element is in said second state and being able to initiate the configuration of the beverage machine for dispensing the beverage type associated with such switch element,

15 and

said switch configuration elements and said switch selection element being configured and disposed such that said light reflection member and said light detection components are displaceable relative to each other between a plurality of releasably lockable positions such that 20 each such lockable position associates the light reflection member with the light detection component of a respective switch element.

10. A selection system defined in claim 9 wherein said light reflection member is displaceable between a plurality of releasably lockable positions, said light reflection member and said light detection components being configured and disposed such that 25 each such lockable position associates the light reflection member with the light detection component of a respective switch element .

11. A selection system as defined in claim 9 wherein the light reflection member is an infrared light reflection member and the light detection component of each of said switch elements is an infrared detection component comprising an infrared emitter means for providing infrared light for reflection from said light reflection member as reflected infrared light, and an infrared light detector means for detecting said reflected infrared light from said infrared light reflection member. 30

12. A hot water dispenser system comprising:

a valve assembly

a hot water component for producing hot water,

a fluid conduit component providing fluid communication between said hot water component and said valve assembly

said valve assembly comprising a one or more selectively operable solenoid valves, each solenoid valve being in fluid communication with said hot water component for selectively directing hot water from said hot water component through a respective conduit branch to a predetermined station

said hot water component comprising a hot water heater and an pump for the displacement of water from said hot water heater through said valve assembly to a predetermined station

and

a malfunction sensing component for sensing the absence of water in said fluid conduit component and for generating in response to the absence of water a signal indicative of the absence of water.

13. A hot water dispenser system comprising:

a multi-way valve assembly

a hot water component for producing hot water,

a fluid conduit component providing fluid communication between said hot water component

and said multi-way valve assembly

said multi-way valve assembly comprising a plurality of selectively operable solenoid valves, each solenoid valve being in fluid communication with said hot water component for selectively directing hot water from said hot water component through a respective conduit branch to a predetermined station.

said hot water component comprising a hot water heater and a pump for the displacement of water from said hot water heater through said multi-way valve assembly to a predetermined station

and

a malfunction sensing component for sensing the absence of water in said fluid conduit component and for generating in response to the absence of water a signal indicative of the absence of water.

14. A hot water dispensing assembly as define in claim 12 or 13, comprising a flow rate measuring device for sensing the amount of water being dispensed.

15. A beverage machine for dispensing one or more, beverage types characterized in that said beverage machine comprises one or more systems selected from the group consisting of

- i) a conveyance system as defined in claim 5;
- ii) a beverage selection system as defined in claim 9; and
- iii) a hot water dispensing system as defined in claim 12.

16. A detachable valved lid element for covering an opening of a case element said lid element being configured to co-operate with said case element such that said lid element is removably attachable to said case element so as to cover said opening and form an enclosed space for containing a particulate substance,

said lid element comprising a valve member having an outflow aperture and defining a

flow path for the flow of particulate material out of said enclosed space, said valve member further comprising a plug element and a bias component, said plug element and said bias component being configured such that said plug element is displaceable between a closed position and an open position whereby when said plug element is in said closed position said plug closes off said outflow aperture whereby particulate material is unable to flow out of said enclosed space through said outflow aperture and when said plug element is in said open position particulate material is able to flow out of said enclosed space through said outflow aperture, said bias element biasing said plug element in said closed position.